CLAIMS

1. Fibre-reinforced pressurizable structure comprising a gas- or fluid-tight body overwound with a number of fibre filaments, whereby the radius of the body varies with respect to a rotation-symmetrical axis of the structure, such that said body comprises a number of concave surface sections each having a local minimum radius, and a number of convex surface sections each having a local maximum radius, characterized in that at least one concave surface section is overwound with a fibre such that the longitudinal orientation of the fibre along a finite length thereof is orientated substantially perpendicular with respect to the rotation-symmetrical axis of the structure.

2. Fibre-reinforced pressurizable structure according to claim 1, characterized in that the finite length of the fibre comprises a locus at which the fibre undergoes torsion with respect to its longitudinal centre-line.

3. Fibre-reinforced pressurizable structure according to claim 1, characterized in that the finite length of the fibre comprises a locus at which there is reversal of the side of the fibre which is in contact with the body.

4. Fibre-reinforced pressurizable structure according to any of claims 1-3, whereby a parameter called the q-factor is defined as the square of the dimensionless quotient of said local maximum radius of a convex surface section adjacent to the concave surface section in question and the local minimum radius of the concave surface section in question, and whereby a dimensionless parameter called the r-factor is defined as the quotient of the total distribution of the external axial load on the circumference of said local minimum radius and the internal axial force generated by the internal pressure on the surface of the axial section at said local maximum radius, characterized in that when the q-factor and the r-factor of the body have values in the ranges of $q = \{1, 8\}$ and $r = \{-1/q, -1/(2q)\}$, or $q = \{8, \infty\}$ and $r = \{0, -1/q\}$, there is reversal of the side of the fibre which is in contact with the concave surface section.

5. Fibre-reinforced pressurizable structure according to any of claims 1-3, whereby a parameter called the q-factor is defined as the square of the dimensionless quotient of said local maximum radius of a convex surface section adjacent to the concave surface section in question and the local minimum radius of the concave surface section in question, and whereby a dimensionless parameter called the r-factor is defined as the quotient of the total distribu-

tion of the external axial load on the circumference of said local minimum radius and the internal axial force generated by the internal pressure on the surface of the axial section at said local maximum radius, characterized in that when the q-factor and the r-factor of the body have values in the ranges of $q = \{1, 12\}$ and $r = \{-1/q, 0\}$, the fibre is in contact with the concave surface section in question with its one and same side throughout.

6. Fibre-reinforced pressurizable structure according to any of claims 1-5, characterized in that the body is flexible, i.e. non-rigid, and that the fibres are supported by a matrix material.

7. Fibre-reinforced pressurizable structure according to any of claims 1-6, characterized in that the axial length of at least one axial section of the structure is variable with respect to the longitudinal axis of the pressurizable structure.

8. Fibre-reinforced pressurizable structure according to any of claims 1-6, characterized in that at least one axial section of the structure is pivotable with respect to the longitudinal axis of the pressurizable structure.

9. Fibre-reinforced pressurizable structure according to any of claims 1-6, characterized in that at least one axial section of the structure is pivotable with respect to an axis, which axis is orthogonal with respect to the longitudinal axis of the pressurizable structure.

10. Fibre-reinforced pressurizable structure according to any of claims 7-9, characterized in that at least one axial section of the structure comprises a combination of at least two of the technical elements of said claims, e.g. in that at least one axial section of the structure is pivotable with respect to the longitudinal axis of the pressurizable structure and that the axial length of this axial section of the structure is variable with respect to the longitudinal axis of the pressurizable structure as in the case in which the pressurizable structure comprises a substantially hyperboloid shape.

11. Fibre-reinforced pressurizable structure according to any of claims 1-10, characterized in that the pressurizable structure comprises a one- to three dimensional arrangement of a number of pressurizable fuel tanks or pipelines.

12. Fibre-reinforced pressurizable structure according to any of claims 1-11, characterized in that the pressurizable structure comprises a spring means for a load-displacement function, preferably an adjustable load-displacement function.

13. Fibre-reinforced pressurizable structure according to any of claims 1-11, characterized in that the pressurizable structure comprises means for an actuating function, such as for elevators, excavators and industrial robots.

14. Fibre-reinforced pressurizable structure according to any of claims 1-11, characterized in that the pressurizable structure comprises means for a shoring or strutting function, such as construction beams.

15. Fibre-reinforced pressurizable structure according to claim 14, characterized in that the means for a shoring or strutting function, such as construction beams, are adaptable to the Eigen-frequencies of the pressurizable structure.

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